

DEVELOPMENT OF THE RECOMMENDED DISCOUNT RATE ASSUMPTION CERBT

The approach used to determine the recommendation for a discount rate assumption for each asset allocation strategy for the CERBT took into account both short and long term expectations as well as reflecting the expected cash flows of the CERBT.

The first step in this approach was to derive market return assumptions for each asset classification for years 11 and beyond. The actuarial office worked closely with investment staff in developing an approach that could be used to derive these market return assumptions. There was a common agreement that expected return for years 11 and beyond should be higher than is expected of the next 10 years but that they should be lower than the historical returns when looking back to the 1920s.

Table 1 shows both the expected compounded returns (gross of administrative expenses) and standard deviations during the first 10 year period, and for years 11 and beyond.

Table 1: Expected Returns and Standard Deviation of Returns

Time Period	ASSET ALLOC. 1	ASSET ALLOC. 2	ASSET ALLOC. 3
First 10 Years	7.10%	6.50%	5.75%
Years 11 and Beyond	8.32%	7.85%	7.22%
Standard Deviation	11.73%	9.46%	7.27%

The expected geometric returns for years 11 and beyond were derived by first obtaining the historical geometric returns for each asset classification and adjusting them to reflect current market conditions. For example, for public equity, the market return assumption for the first 10 years was an expected geometric return of 7.75%. Long term historical geometric returns have been about 9.8%. This rate was adjusted down to 8.76% to reflect current market conditions and how these initial conditions were believed to impact long term returns. The same fundamental approach was used for each asset classification leading to different levels of adjustment for each asset classification.

To determine an appropriate discount rate recommendation, distributions of annual investment returns over a 60 year period were stochastically generated for each of the three CERBT asset allocation strategies. For example, the first 10 years of asset allocation strategy 1 were simulated using an expected return of 7.10% and a standard deviation of 11.73%; years 11 and beyond were simulated using an expected return of 8.32% and a standard deviation of 11.73%. Overall, for each asset allocation strategy, 10,000 scenarios of 60 years each were simulated.

For purposes of recommending a discount rate assumption for each asset allocation strategy, staff adopted a method that considers future expected benefit payments for the CERBT. In this way the timing of benefit payments over the projection period can be weighted properly.

Using the expected OPEB benefit payments for the State of California, staff concluded that a 20 year period would be ideal to use in determining a reasonable range for a discount rate assumption. The 20 year period was determined to be the length of time required to equate the present value of future benefit payments using the select and ultimate investment returns with the present value of future benefit payments using the level discount rate.

The simulated returns were used together with the asset allocation strategies adopted by the CalPERS Board to determine the 25th to 75th percentile range of the geometric expected return over a period of 20 years. The 25th, 50th and 75th percentiles for the geometric rates of return for a period of 20 years are shown in table 3 below.

Table 2: Percentile Results for a Period of 20 Years

Asset Allocation Strategy	25th Percentile	50th Percentile	75th Percentile
1	5.95%	7.76%	9.58%
2	5.75%	7.21%	8.67%
3	5.40%	6.54%	7.62%